

MOBILE GAMING PROSPECTS: THE CHALLENGES TO BECOME A SERIOUS INDUSTRY

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Telecommunications at new crossroads: changing value configurations, user roles and
regulation

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Abstract

Mobile games are a main example of both a successful mobile application and the increasing range of platforms for the media and entertainment industries. Against this convergent background, the paper introduces the basic features of the mobile gaming market and its industrial ecosystem with main actors and activities. Its focus lies on the challenges ahead for its evolution into a potentially dominant game platform and on the possible disruptions along this road. The future role of context and the deep personal relationship with the mobile device are considered to further explore mobile games link with users' perceptions, players' strategies and pending techno-economic developments.

1. INTRODUCTION

Applications on the mobile platform¹ are an outstanding example of the convergence between electronic communications and media and entertainment industries (C. Feijóo, Maghiros, Abadie, & Gomez-Barroso, 2009). Convergence usually means huge expectations on new businesses derived from the opportunities of an unexplored domain, but also practical difficulties in transforming existing markets and understanding users' new preferences, particularly regarding on-line content (Screen Digest, CMS Hasche Sigle, Goldmedia, & Rightscom, 2006). This is exactly the case of mobile gaming. Due to the diffusion of mobile handsets, the mobile platform offers wide demographics and ample space for the adaptation of existing games and the –innovative- development of new types of games. In fact, they are already a viable alternative to other gaming platform. According to iSuppli data, sales of games-capable handsets are expected to grow 11% during 2010, with forecasts of 1.3 billion gaming-enabled phones to be sold in 2010, compared to just 39 million gaming handhelds, and about 52 million consoles. In addition mobile games can make intensive use of the competitive advantages of the mobile platform: ubiquity –any time, any place-, the highest level of personalization –but keeping close contact with the social network-, and, looking into the future, context-awareness –location as a current and main example. At the same time, mobile gaming confronts also a number of challenges, ranging from technology and economics to the institutional framework. From a historical perspective there was first a business culture clash between mobile operators and content / applications providers only lately and partially solved through the application stores burst onto the mobile scene. Price, usability and processing power of mobile phones was next, again on its way to be solved with the forecast market success of smartphones. Lack of mobile broadband impeding on-line and social gaming is also becoming an issue from the past at least in most parts of the developed world, and particularly in Europe². Notwithstanding the above, the echoes of these difficulties surface in the complexities of the mobile ecosystem, in the fight for the control role in the emerging platforms within the

¹ A mobile platform is defined as comprising at least a mobile device (a handset, for instance) and/or a mobile network. This definition allows including “side-loading”, i.e., downloading a game to a PC through Internet and then to the mobile device via a cable or a Bluetooth-type connection, as well as the more straightforward procedure of going to an application store through a mobile device and network, installing the game in the device and start using it.

² Mobile broadband starts with the third generation (3G) of mobile communications (the UMTS family of standards in Europe) and with current 3.5G (HSPA standard in Europe) and future 4G (LTE and WiMax technologies as main contenders), see Ramos et al (2009) for further details. According to the latest Mediascope Europe report (EIAA, 2010) 71 million Europeans browse the mobile internet in a typical week and, with almost an hour a day actively spent going online via their mobile (6.4 hours per week), ‘internet-on-the-move’ is proving a more frequent activity than reading newspapers (4.8 hours) or magazines (4.1 hours).

ecosystem, and in the different perceptions on the mobile game realm evolution: still for many game developers mobile is just another distribution channel; for mobile industries games are just another type of content / application. But beyond mere techno-economics lie a number of more fundamental challenges. Attracting, rewarding and sustaining innovation in the mobile game field so it becomes a “serious” industry is arguably the bigger of them. The conditions for such innovations are a very relevant matter for Europe which counts on a powerful mobile industry -device suppliers, network suppliers and mobile operators- and, logically, considers the cultural aspect of games as a differentiating asset.

Precisely, this paper will analyse the status and future prospects of mobile gaming with a view on the European competitive position. For this, after a brief history of mobile gaming, the mobile game ecosystem will be introduced in some detail, along with the main players’ strategies and the user perspective. A specific section is devoted to market data and opportunities. Finally, the paper concludes with the challenges ahead for its evolution into a potentially dominant game platform, discussing some of the possible disruptions along this road.

2. A BRIEF HISTORY OF MOBILE GAMING IN EUROPE AND NORTH AMERICA

Beyond merely playing some very simple games in a mobile handset, the beginning of a true mobile gaming market can be set in 2002³ when mobile operators started commercialising phones able to download additional games from their own portals⁴ and a separate spending stream was generated. Before then the users could only play games like Tetris that were embedded into the handsets.

From 2002 to 2007 the market was characterised by still relatively simple games similar to those developed for consoles 10 to 15 years ago, fundamentally because of the limited graphical and processing power capabilities of handsets. Still the majority of consumers played the games that were embedded in the phones although it was already possible to download games from the operator’s portal or third-party stores⁵ paying typically a onetime fee. Alternatively, and only for some models of mobile devices, games could be downloaded from a third-party website to a pc and then side-loaded. Thus, the most popular mobile games of this type were single-player board games, word games and puzzles of different types. During this

³ It was about three years earlier in Japan, see for instance Lindmark and Bohlin (2003).

⁴ Also referred as games (content and applications in general) “on-deck” the mobile operator, in contrast with “off-deck” or “off-portal” games located in third-party mobile portals.

⁵ Some popular stores in Europe were Buongiorno, Jamba or Gameloft.

period, and because of the simplicity of the games, the average amount of time spent playing on the mobile was limited, around as much as 30 minutes each time according to PWC (2009), rather different from the hours typically required to complete a console game. As another particular feature, the mode of playing was mostly casual while “filling time” in between daily activities. However, the casual gaming style caused a widening of the demographics of mobile gaming, with the important consequence of including women as regular gamers.

The techno-economic model was, therefore, a vertical integration with the mobile operator taking centre-stage. This is the notorious “walled garden” model⁶. Within it, mobile games were provided at the mobile operator portal and they functioned in a particular set of handsets that were marketed and subsidised also through the decisive participation of the mobile operator. The revenues were generated by operators within their own value structure and where users were guided to stay as much as possible within this structure. For game developers the walled garden approach meant that their mobile offerings had to be technically and business compatible -or even be developed within- a very specific mobile platform. Obviously, each operator used a different platform, and, therefore, it resulted in a huge increase of opportunity costs for developers. A further issue for game publishers was that operators would typically deal only with established brands, so for start-ups the process to getting them onto the operator system was often time-consuming and expensive, if it succeeded at all. In addition, there were a number of exclusive deals precluding open agreements with game developers or publishers at large.

This model was about to change in 2006-2007⁷ with the introduction of mobile phones – the “first wave of smartphones”- with greater computing power, storage capacity and graphical and audio capabilities. Nokia was the prime mover with its –market- failed attempt of putting together a mobile phone and a handheld console, the N-Gage, as early as 2003. Acknowledging the lack of response from users, Nokia displaced its experience in gaming to smartphones and showcased its “next-generation mobile gaming platform” in 2006 (Soh & Tan, 2008), a move relevant not only because of its technical performance but also as a starting point for the shift of market power in mobile gaming from carriers to handset suppliers and application providers.

It was also in 2007 when the availability of mobile broadband connections with – relatively- flat data fees (3UK launch these tariffs in late 2006) and, above all, the appearance of

⁶ The concept behind the “walled garden” label refers to the exclusive provision of content and applications within a given platform. In the case of mobile communications, this platform was typically the portal of the mobile operator. For further details on this model see, for example, Ramos et al (2002)

⁷ Earlier in Japan due to the success of i-mode and the high-end handsets marketed within this model, see Bohlin et al (2003)

the iPhone (late 2007) changed dramatically the scenario of mobile gaming. The combination of new possibilities in the handset (touch screen, motion sensor, location, enhanced display, storage, high-quality audio, camera) and the ubiquitous connection to the network allowed many innovations: choosing easily an increasing number of games in application stores not necessarily through operator decks and downloading them immediately to the mobile device, subscribing to keep playing while on the move, using multi-player games from the mobile, playing across several media using social networks, the emergence of context-aware gaming, etc. It was arguably Electronic Arts' "Spore Origins" in early 2008 the first big hit in mobile games making use of some of these new possibilities. However, iTetris (now also as a download) remained the most popular type of game in 2008 (PWC, 2009).

2007 and 2008 brought, in addition, main innovations in terms of business models to the market. For instance in the UK operators T-Mobile and Blyk started experiencing with advertising supported games. Also Greystripe and Glu Mobile, two popular providers of games, offered free playing in exchange of being exposed to advertising. There were also examples of the blurring boundaries across media: for instance Facebook was used by a number of companies to distribute games to mobile players. Other popular games, like Sims, provide additional game content to be downloaded to mobile phones. It is also from 2007 when a relevant number of development studios decided to focus exclusively on the mobile devices instead of porting existing console or pc games⁸. These innovations responded also to an increasing pressure from demand to enjoy an unrestricted and wide choice of content and applications.

As a summary, it could be said that from 2008 we have entered a new phase in mobile gaming that we can call "mobile Internet model" where both browsing from the mobile and downloading from applications stores are the most relevant ways to consume and use games. Therefore, we are no longer in a scenario where mobile gaming is a delayed-in-time and modest extension of console or pc games, but a rather distinct user experience with a number of unexplored avenues. In fact, the appeal and opportunities in this market are able to attract innovators, entrepreneurs and many old and new industry players, which all together configure a wide ecosystem⁹, analysed in detail in next section.

⁸ See for instance I-play

⁹ The ecosystem metaphor is used to refer to a high number of players that interact within a given environment in which none of them is able to control it completely; thus, both collaboration and competition occur at the same time.

3. AN OVERVIEW OF THE MOBILE GAMING ECOSYSTEM

The mobile gaming ecosystem follows the conventional three-stage model for digital mass consumption: (1) creation / production / publishing, (2) delivery / distribution / access and (3) use / consumption / interaction (C. Feijóo et al., 2009; Fransman, 2007), see Figure 1. The figure also highlights the pre-existing activities in the software game industries (white boxes), those elements directly connected to or needed by mobile games (pale grey boxes) and new – and generally non-existing- activities for next generation mobile games (dark grey boxes).

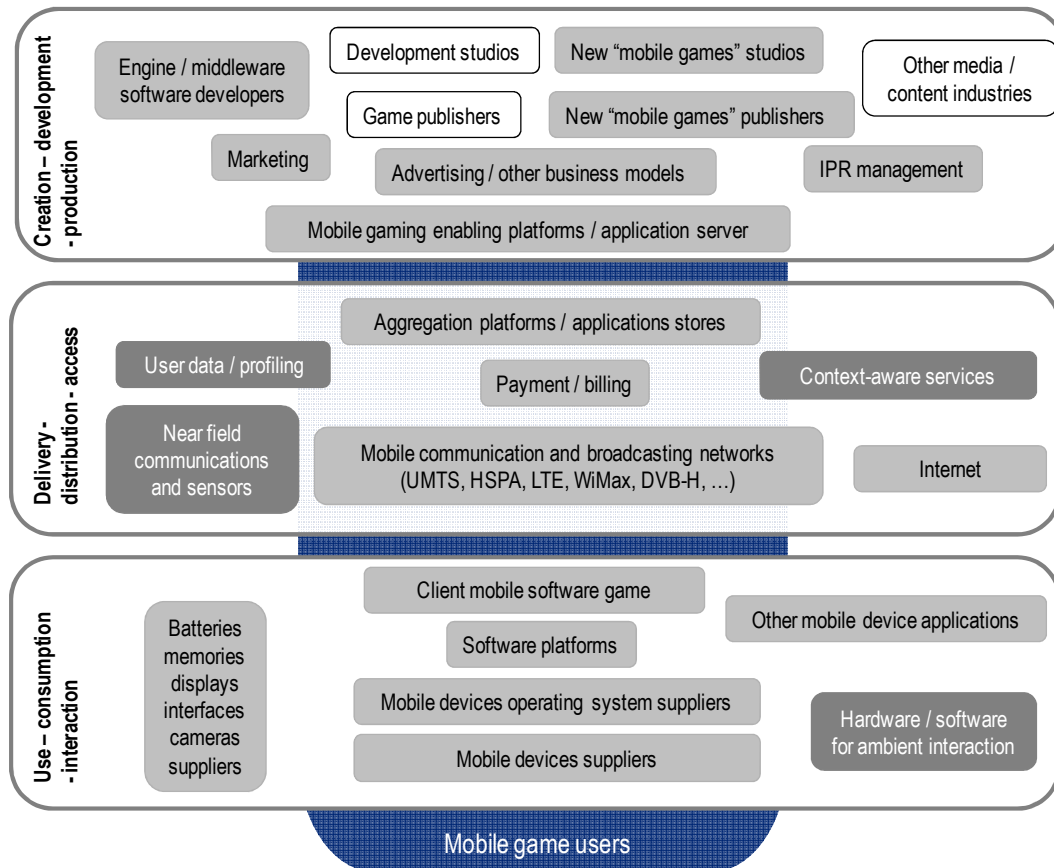


Figure 1: Structure and main activities in the mobile games ecosystem

As an overall comparison with the software games industry in terms of main players, it could be said that in the mobile domain the market relevance of game publishers is counterbalanced with that of mobile operators, handset suppliers and application stores providers. It is also obvious from the number of activities presented in the diagram that the resulting structure of the mobile game ecosystem is rather complex and, from developers and publishers perspective, putting a mobile game into the market involves more steps than in another gaming platform. In particular, in a typical scenario mobile games have to match a quintuple layer of technical specifications that mainly impact on the software programming: device, operating system in the device, applications in the device that could be connected with

the game, features of the technologies used in the network infrastructure and implementations of support systems, including portals, application stores, platforms or billing. Taking the perspective of a game developer, from the four main components in a networked game: game engine, control and communication devices, data network and processing systems (Zyda, 2009), three of them have to confront an array of varieties in the mobile environment. In addition of all of the above, eventually there could be some other specifications related with potential personalisation according to user profile and/or context.

A successful mobile gaming provision requires the contribution of different players carrying out most of the activities shown. But since the high number of activities and players in the ecosystem increases the transactions costs, it is, therefore, a rational step that some of the main players try, and eventually succeed in, integrating as many activities as possible or, at least, keep them under some type of control. This is the “platformisation” of the mobile ecosystem (Ballon, 2009a), in which main players try to group together –in a loosely or tight cooperative scheme- all the required roles for the provision of the mobile offering on a common set of hardware, software and techno-economic specifications.

There are recent and important examples of this new approach: mobile device suppliers like Apple (from iTunes to App Stores for iPod, iPhone and iPad), Nokia (Symbian development platform and the Ovi application store), or application providers like Google (the Android suite, the new smartphones based on it and also its application store). All of them are looking for new profits from the combination of mobile content and applications with their portfolio of products and services, lowering techno-economic barriers for interested third-parties and increasing the usability of consumption and interaction with mobile content. Interestingly each of them represents a different approach to the same concept. While Apple basically uses a proprietary software development kit on top of his operating system and own-controlled hardware keeping a tight control on the developments, Google’s Android has opted for a model closer to the open source software keeping the steering wheel of the evolution of the platform. Nokia’s model seems to lie somewhere in between the two covering not only the smartphones segment but the features phones one. Other main players in the mobile ecosystem have followed the same steps and, for instance Microsoft (Windows for Mobile), RIM (Blackberry), Palm, or many mobile operators (Vodafone, Telefonica, etc) have announced –and set up- application stores and software platforms for the interested developers.

In fact, the impact of new platforms and application stores has been considerable from the perspective of mobile gaming development: while development and marketing costs for a console or pc game may run in the millions of euros, such costs for a mobile game were already typically in the range of the hundreds of thousands, sometimes even less (Soh & Tan, 2008) before the emergence of platforms. In the new platforms these costs may be even an order of

magnitude less¹⁰. Thus, the low entry barriers for mobile games have helped spawn a proliferation of small mobile-game software developers and the possibility to account for the long-tail of potentially interested gamers. At the same time, and due to the increasing competence, mobile software developers require more than ever marketing help either in the traditional publishing scheme or via the new platforms.

The overview of the mobile gaming ecosystem is completed with some considerations about the business models. To this regard, there is still a general ignorance about which the most successful business models will be for mobile games. In general terms, it can be said that the traditional mobile industry focuses on how to generate revenues from mobile gaming as an additional –and secondary- source with regard to voice and data. Alternatively, content-entertainment industries try to figure out how to use the mobile channel as a supplementary source of revenues with regard to other gaming platforms. Finally, new platforms require business models suitable for flexible, application-centric configurations. Beginning with the game publishers –content providers-, they fundamentally use a translation of the existing business models of the software game industry into the mobile domain: retailing (pay-as-you-go), premium retailing (the game with basic functionalities is free) and subscription (for gaming on-line). The business models for the other main types of players –operators, suppliers and application stores owners- rely basically on their market power in the mobile ecosystem to arrive at some form of sharing revenues with the game publisher or to benefit from their position in the ecosystem (billing or customer relationship, for instance). The two more recent additions to business models in the domain are advergaming, the combination of advertising and gaming, and value-added applications, from which -during its use- it is possible to access to new functionalities. In this last case it would be possible to go beyond the traditional pay-per-download to incorporate billing from within the application itself for a variety of additional content and services (Holden, 2009).

4. THE USER PERSPECTIVE

The ecosystem is completed with the role of the users. To this regard, it shall be recalled that the mobile game consumer is not isolated from other daily activities and has to split the use of the device and the time for game playing with other main uses such as communications (voice, sms), Internet (web browsing, emailing, social networking, etc), a number of competing applications (music, video, etc) and gaming on other platforms (videoconsoles, PC, etc). In the

¹⁰ According to Nokia sources, this costs would be in the range of the 10000 € in 2010 for an average application

following paragraphs the main attributes of mobile gaming from the user perspective are examined. Some of them are common with other mobile/digital content and applications segments (wide demographics, long tail, being confident with technology, ease of use, need of availability and affordability of networks and devices), but other are more specific of the mobile gaming domain (personalization, social networking, adoption and acceptance, culture and lifestyles, use of context, hedonic vs. information elements). All together they offer a multi-faceted view on the most intriguing element in the mobile gaming ecosystem: the consumer.

The first attribute of interest is the already wide and potentially even wider demographics of mobile gaming due to the huge and still increasing penetration of mobile technologies, mobile devices in particular. In terms of penetration, they are much more ubiquitous than any other gaming platform with predictions of above 5.000 million users in 2020 (Williams, 2008). This fact opens up many opportunities for game developers and publishers in a demographic process relatively similar to that of the video console games, where their initial use by early adopters has led to broader age and income profiles¹¹. As an instance of this trend, a survey (Accenture, 2009) of US consumers in the winter of 2007-2008 revealed that baby boomers (aged 45 and older) accelerated playing video games on the go via mobile devices by 52% compared with a very modest increase of 2% for generation Y (ages 18 to 24) consumers.

In addition, this shift in demographics explains the relevance that the long tail could have. The diversity of potential consumers of mobile games and the low costs involved in reaching them allows for the appearance of games that can be suited not the average mass consumer but to some specific segment or need. Even other digital media are not able to keep up with the rhythm of deployment, the variety of choice and the rise of the "casual" gamer that uses "dead" time to play in the mobile platform, which is emerging as the natural media to keep updated with novelties and connected with the social network.

Personalisation of mobile content and applications has been considered for long as the main differential attribute –together with ubiquity– of the mobile platform. However, empirical surveys show that the process of acceptance of advanced mobile services, gaming in particular, is more complex than just providing these two attributes (a mere “supply side” approach). They also prove that a gap still exists between the intention to use and actual usage and, from here, that a more comprehensive demand side approach is still missing. For instance, Verkasalo (2008) used a panel of 579 active smartphone users in Finland to show that the short-term intention of usage of gaming on a mobile is a meagre 21.7 %, falling down to a practical usage

¹¹ See Nielsen (Nielsen Games, 2008) for an account of the European demographics of video gamers.

of 12.9 %. The explanation for these low results seems to lie in the combination of three factors: no value perceived (no need), pricing, and the existence of alternative devices. In the same country, Kolmonen (2008) has confirmed that flat-rate tariff pricing is a driver for the diffusion, while low usability is a barrier, especially the small screen resolution. In a more recent study of the Finnish market with three main applications, maps, games and mobile Internet, Verkasalo et al (2009) conclude that people who own a smartphone will not automatically use all the available services in spite of being the likely devices with which users are going to access advanced mobile services in the future. They also show that behavioural control is a very important concept. The idea that people can control their own applications, as is the case with smartphones, makes it more likely they will adopt advanced mobile services, implying that lack of usability and technological barriers have a negative effect on behavioural control. In the particular case of games they conclude that, rather logically, perceived enjoyment is a main driver for adoption.

It is also true that the situation is changing rapidly as a consequence of the deployment on new infrastructures and devices. To this regard, while back in 2006 in the USA less than 4% of subscribers downloaded games, the consumption of games was three times stronger in 3G handsets. In the same country, a survey of 1163 US respondents (Rice & Katz, 2008) done in 2007 showed that demographics (digital divide factors, social support), privacy concerns, and prior communication technology use should be also included as factors explaining the interest of users in new mobile services for entertainment. A recent study in the Netherlands with 542 users (Bouwman, López-Nicolás, & Molina-Castillo, 2009) confirmed that lifestyles, i.e., “how people live, how they spend their money and how they allocate their time” have a decisive influence on the adoption of mobile entertainment solutions.

Finally, some words on trust and consumer protection. Trust is a key aspect in the personal relationship with the mobile devices, which now belong to a greater extent to the intimate sphere of the user than any other device in the past. The knowledge of the context and situation of use of the mobile is a major source of potential appealing applications. However it is unclear whether users are interested in the exchange of personal data for usefulness or entertainment. To this regard, unfortunately there have been, and still are, some cases of consumer abuse¹². Screen Digest (2006) reports the consequences: "a number of portal companies have been fined for mis-selling subscription services to consumers. This has created a number of problems in the market, primarily with consumer perception of mobile content

¹² A 2008 EU-wide investigation into websites offering mobile phone services such as ring-tones and wallpapers resulted in 80% of the sites checked need to be further investigated for suspected breaches of EU consumer rules. See EC (2008) for additional information

generally, portals in particular ...". As another instance of the dimensions of this issue, mechanisms for restricting access from a mobile to gambling or adult content are very inconsistent. A report of the US Federal Trade Commission (FTC, 2009) identifies concerns over the availability of age-inappropriate content in mobile games. For instance, the FTC notes that most mobile games are not rated according to the standards established by the Entertainment Software Rating Board (ESRB): "Given the sheer volume of game applications currently available for mobile devices and the dramatic rate at which applications are proliferating, in the near term, responsibility falls on wireless carriers and individual publishers to provide content information" the report states. The FTC study examined the Apple, Verizon Wireless, AT&T, Sprint and Nokia websites to assess their respective efforts to rate advertised mobile game titles, and determined that all five websites offered games containing violent content, some of them mobile versions of home console titles tagged with the ESRB's M-for-mature rating. While none of the three U.S. operators offered rating information for their mobile games, the FTC reports that Apple assigns games age-based designations and content descriptors (e.g., "Frequent/Intense Realistic Violence"), while Nokia displayed the age-based rating and content icons used by the Pan European Game Information system, created by the EU Interactive Software Federation (ISFE)¹³. The FTC commends mobile game sellers for instituting rating systems for their products, but adds the proliferation of different systems could create consumer confusion. "Further, it is important that these alternative systems be credible and comprehensive," the report states.

5. THE OPPORTUNITIES ...

Second to music, mobile gaming is one of the fastest growing segments in mobile creative content industry. The latest figures available from market analysts (C. Feijóo et al., 2010, forthcoming) show that the global value of the market was estimated to lie from 3 to 6 billion € in 2008, i.e., around 10% of the 40-50 billion € global video game market, about 20% of the mobile content and applications market and a tiny 0.01% of the global mobile revenues. These differences explain easily the perceptions on the mobile gaming relevance from each of the main players involved. According to the same sources EU market share in mobile gaming was about 20% in 2007.

Regarding global mobile gaming market prospects, industry expects that gaming on this platform doubles its value in the period up to 2013-2014, reaching in the optimistic scenarios

¹³ See www.isfe-eu.org

around 10-12 billion € of global value with estimations for CAGR ranging from 8 to 25%. Interestingly it is the only one of the main mobile content and applications market segments where it is forecast that EU share of the market slightly increases (up to 23%). A 2010 forecast issued by research firm DFC Intelligence¹⁴ expects Apple's iPhone and iPod touch devices to account for about 24% of total portable game sales in 2014. Smartphone analytics firm Flurry reported¹⁵ in March 2010 that Apple's iPhone alone had nabbed 5% of the US \$10 billion gaming market, with 30.000 games released on the App Store since July 2008.

Looking at mobile gaming on a regional basis and using data from Netsize (2008, 2009) and PWC (2009) several results are relevant. First, comparing main regions, it is the EU where the highest regional growth has taken place from 2007 to 2008 (42% for EU-5, with growths around 50% in France and Spain). Second, Asia has been leading this market with Japan and Korea in front. Since there are –and there will be– more mobile subscribers in Asia than in the rest of the world combined it is foreseeable that this region, helped by mobile communications technologies upgrades, maintains the lead. According to PWC (2009), the CAGR in this region for mobile games will be of about 16% until 2013. In addition analysts (Holden, 2007) believe that the fastest growing region for mobile gaming will be the Indian sub continent due to the fact that "the mobile handset is the de facto games console in a region with negligible broadband penetration and no console base to speak of". Some more recent data from Mediascope Europe (EIAA, 2010), where 15 European countries were surveyed, show some interesting trends along the same lines of increasing usage of mobile Internet and substitution of other media. In fact, the Eastern Europe countries show a higher usage of mobile Internet with Poland topping the list at 10.3 hours per week (Europe average at 6.4 hours). Third, North America (USA) is behind the EU and Asia in terms of adoption of mobile gaming –and other advanced applications– because of the historical delay in the deployment of 3G technologies, a gap that it is expected to close down in coming years. Analysts (PWC, 2009) expect a CAGR of mobile games in the North America region of 8% up to 2013. Last but not least, some leading markets could be showing symptoms of some saturation or, at least a slowdown. Data from industry sources is still too anecdotic and subject to interpretations to be a definitive proof of this trend, but it is interesting to note that it is shown in leading markets: Japan with “only” a

¹⁴ See

http://www.fiercemobilecontent.com/story/mobile-titles-now-3-percent-total-u-s-game-spending/2009-12-01?utm_medium=nl&utm_source=internal

¹⁵ See:

http://www.telecomseurope.net/content/gaming-firms-target-mobile-phones?section=HEADLINE&utm_source=lyris&utm_medium=newsletter&utm_campaign=telecom-europe

18% growth from 2007 to 2008 (less than in previous years) or even a decrease of 8.0% from 2007 to 2008 according just to Netsize data. Since the slowdown has not happened in other markets it can be discarded as an effect of the economic crisis, and with latest data from 2008 is too early to show if other effects on mobile gaming such as applications stores as platforms are affecting the growth of the market.

To complete the opportunities, anecdotal evidence compiled by the authors show that mobile gaming is truly a multinational domain with companies from several countries providing contents in any other market. It shows also some signs of consolidation with some companies appearing consistently across rankings (Electronic Arts and Gameloft, as main examples) and some others being the target of acquisitions by relevant entertainment-oriented players¹⁶. At the same time, there are also some small companies or even individual developers highly successful (Team17, Firemint or Lupis Labs as recent examples), showing that there are no high entry barriers in terms of competition. Finally, from a European perspective, it seems that there is a relevant number of companies already present with success in the mobile market segment.

As a final summary from a game developer perspective, Table 1 presents some relevant figures for the main emerging mobile gaming platforms compiled by the authors. Data on the current opportunities for each platform speak from themselves.

Table 1: Main economic data for platforms from a mobile game developer perspective in 2009.
Source: compiled and estimated by the author from publicly available industry data¹⁷

<i>Data(year 2009, or Dec 2009 when applicable)</i>	<i>Apple platform</i>	<i>Nokia platform</i>	<i>Android platform</i>	<i>RIM platform</i>	<i>Windows platform</i>
Expected mobile gaming market share (%) of platform in 2014	24	-	-	-	-
Annual revenues of mobile games (million euros)	150	-	1.4	-	-
Number of mobile games in the platform	23 000	1 300	3 000	600	120
Games added to the platform in the last month	2 000	-	-	-	-

¹⁶ Disney has purchased music game developer Tapulous, the startup behind the bestselling iPhone series *Tap Tap Revenge*, in July 2010. See: http://www.fiercemobilecontent.com/story/disney-acquires-iphone-game-hitmaker-tapulous/2010-07-02?utm_medium=nl&utm_source=internal

¹⁷ Note that some of the data are not completely congruent due to the diversity of sources used. In spite of that it has been preferred to maintain those data on the table to give a more realistic view on the available figures for a developer interested in the domain.

Percentage (%) of free applications in the platform	25	15	57	24	-
Average price of a paid application in the platform (euros)	2.6	2.1	3.1	6.6	5.7
Percentage (%) of revenues for the developer	70 ¹⁸	70	70	80	70
Average net income for developers per mobile game (euros)	6 500	-	-	-	-
Net income of the top seller game per month (euros)	270 000	-	18 000	-	-
Number of games downloads per month (millions)	20	6	4	-	-
Average number of games download per user per month	2	-	1	0.3	-
Number of developers signed for the platform	100 000	-	-	-	-
Developer fees (euros)	75 (per year)	50 (sign up)	20 (sign up)	150 (per 10 apps)	75 (per 5 apps) ¹⁹
Average total cost of development of the first mobile game (euros)	-	8 000	-	-	-

6. ... AND THE CHALLENGES

Mobile gaming could have a long way to reach saturation departing from its present state. As discussed previously it is currently only used by a –although increasingly wide– minority of mobile users and the short-term intention to use mobile games is not fulfilled. However, this growth confronts serious issues in the middle term due to exhausting the simple model of mobile gaming being a “time filler” and due to not offering the image of a “serious” industry able to offer value and usefulness for users. Some economic data previously considered –signs of saturation in some markets, percentage of gaming applications in mobile stores– show effectively mobile gaming lying in a “plateau”. This is also confirmed by some user surveys. For instance Pew Internet (Horrigan, 2009) shows that among US mobile users gaming has been adopted by 27% of them, a percentage that has not change from 2007 to 2009 in spite of the success of smartphones and application stores.

¹⁸ 60% in case of advertising within the application (free for the final user)

¹⁹ And 75€ per additional application in excess of the first 5.

Apart from solving the roadblocks related with privacy, trust and consumer protection, maybe not different from other platforms but possibly more intense due to the very personal nature of user relationship with the mobile device, the –disruptive- types of mobile games that can impel this market segment into new growth require intensive use of the new facilities brought both by mobile communications (mobile broadband, context-awareness) and 2.0 Internet (on-line and social gaming). A survey of 876 mobile industry experts in 2008 seems to confirm this hypothesis, see Netsize (2009), since mobile game publishers thought the key drivers for the industry were the porting of games across platforms, the building of communities around the game and the access to marketing and advertising tools, while from the consumers perspective the key drivers were thought to be mobile data billing transparency, innovative business models able to balance the interest of users for games and their price, and new types of games.

The availability of a suitable mobile broadband connection is a necessary condition for the fruition of new types of on-line mobile gaming as well as the appearance of mobile broadband connection fees not very dissimilar from the fixed ones. However, they are still comparatively expensive, particularly in the case of international roaming. Mobile broadband connection can also contribute to overcome the limited capabilities of mobile devices. With some form of mobile “cloud computing” it would be possible to balance the processing power between the device and the network. In fact, mobile devices would only need to bear a small portion of the informational burden, while "the cloud" may carry most of it. Obviously this can only be viable in a scenario of ubiquitous and affordable mobile broadband connections.

Together with the affordable and ubiquitous mobile broadband connection, the other necessary condition for the expansion of mobile gaming is an adequate device. The increasing multiplicity of choice in the mobile devices capable of using content and applications (smartphones, PDAs, ultra-mobile computers, mini-computers, portable players, portable consoles for games, ...) and the recent innovations in both hardware and software for mobile devices will increase the speed of change and bring about new developments of interest for the market. However, "advanced-smart" devices are still modestly deployed in the market and are comparatively expensive.

In addition to on-line mobile gaming, which requires available and affordable mobile broadband and smart devices as discussed, the main potential disruptions in mobile gaming lie in the leverage of context and the social network. Multiplayer games are in fact an early version of a social network for gaming. Social networks add to the concept two additional possibilities: building a community around the game –that could extend much beyond it- and the viral distribution. The integration of the most popular Internet social networks, such as Facebook, in the mobile phone and the emergence of purely mobile social networks, like Twitter, will help

the combination of mobile gaming and social networks²⁰. Also in 2010 cross-platform gaming based on social networks has been announced²¹. In fact, a survey (Lai, 2007) run amongst US students revealed that mobile phone and social networking usage are correlated, in terms of intensity and scope of use. Those people that spend more time on their mobile phones would spend more time on their use of online social networking. In addition, those who have broader use of mobile phones are likely to have more diverse activities in using online social networking. Available data²² suggests that consumers do not wish to create new and separate social networking profiles for the mobile platform, but instead prefer to access their existing social networking accounts on the go.

With regard to the use of context in gaming, context characteristics are typically derived from sensors—both users' bio-parameters and their physical environment—and from cognitive technologies (Klemettinen, 2007). It is expected that the use of context opens undiscovered needs and interactions. For instance, as mobile devices have rich sensing capabilities, they allow augmenting the real world commons with the Internet (Griswold, 2007). The mobile device will be, then, the natural tool to bridge the physical world surrounding us with the wealth of information on the net and users will put the many situations of their real daily lives at the core of mobile usage. As an example of this future potential, users leave traces that can be used—anononymously and/or with privacy matters solved—as a way of gaming. Mobile augmented reality (MAR) where information coming from the virtual –Internet- world is superimposed on physical objects and browsed through a mobile device is the concept usually associated to the use of context. The size of this market is negligible in 2010 since only a small minority of smartphones are MAR-enabled. However, this proportion will rise dramatically in the medium term as the result of increasing adoption of smartphones along with greater deployment of MAR enablers such as digital compasses and accelerometers. Probably although initial service adoption will be driven by MAR location-based search, analysts expect the first substantial revenues to be derived from MAR-enabled games from 2011-12 onwards.

But maybe the most dramatic challenges for the mobile gaming domain come from the collection of existing "open, but not open" platforms (Ballon, 2009b). They imply a clash of business models and cultures. Content and application providers intend the network to be neutral and a mere system of transport and distribution while operators try to complement

²⁰ During Apr 2010, Twitter has recommended third-party application developers for its platform to focus “on location services, gaming, analytics and emerging markets”.

²¹ RealNetworks announced in May 2010 the launch of GameHouse Fusion, a social gaming platform spanning across multiple social websites and mobile devices including Facebook, MySpace, iPhone, iPad, and Android.

²² See additional references at Feijoo, Pascu, Misuraca and Lusoli (2009)

connectivity with value-added content and applications. In addition, it is now the –hardware and software- suppliers of mobile devices which are looking into silo models to extend their control along the value chain. The –partly latent- conflict implies that the market is still in an early stage of competition focused on platform control.

From a software game developer perspective the low costs of development in mobile platforms and the availability of a direct-to-consumer channel are counterbalanced by the high number of these –Apple, Google, Nokia, RIM, Microsoft, Samsung, Sony-Ericsson, Palm, Sun, Qualcomm, mobile operators, etc- and their different implementations in specific mobile devices and networks, therefore increasing the transaction costs for those developers wishing to work across several platforms. Worst, the increased competition among games in any of these platforms gives more relevance to the role of marketing and advertising and, consequently, shifts the market power back from developers to publishers and platform owners. Thus, it is now the platform owners who negotiate with mobile operators to ensure the –subsidised- presence of the device part of the platform in each of the mobile communications national markets. As part of this new platform scenario, the application stores seem to be in 2010 the “market shapers” strongly influencing users’ perception on mobile content and applications and not just the innovation from application developers themselves. Also relevant for developers, a number of big players are crafting their own strategies into the domain (recent examples are Disney, Microsoft, Sony-Ericsson and Apple, for instance). Most of them include building an in-house development team for mobile gaming. This team can be created from inner knowledge already existing in the company and/or hiring/acquiring external knowledge. If this becomes the usual case for mobile games development, the precedents in the console industry indicate that in-house developer teams become favoured, at the expense of publishing partners.

As a final summary, it can be said that the much sought-after necessary conditions for the success of mobile content and applications, mobile games in particular, are already met in most of the developed countries, and about to be met in the developing economies. Broadband mobile data networks are increasingly available and affordable and also usable and affordable smartphones –and other smart devices- are becoming the standard handset in many markets. In addition, the mobile platform offers a number of particular features, much suited to a successful massive adoption of gaming. Therefore, it comes as a no surprise, if every industry analyst agrees on the high potential growth of the mobile gaming market. Recent developments in new platforms, definitively attracting innovators and providing them with powerful means to reach the end consumers, are contributing significantly to the expectations for growth. However, mobile gaming industry is not mature yet and there still remain significant challenges to overcome its image of being just a side industry, not less among them those derived for the own success of new mobile platforms.

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